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a drive mechanism for moving the movable element between a first position and a second position, the first position allowing treatment of the substrate upon the support structure, the second position allowing the heat exchange member to be spaced from the substrate by between about 0.2 mm and 3.0 mm to enable conductive heat transport across a gap between the heat exchange member and the substrate in the second position, the substrate being seated upon the support in each of the first position and the second position.

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54. (Newly added) The reactor of Claim 53, wherein the movable element comprises the substrate support structure.

55. (Newly added) The reactor of Claim 54, wherein the heat exchange member comprises one of the plurality of walls defining the chamber.

56. (Newly added) The reactor of Claim 53, wherein the movable element comprises the heat exchange member.

57. (Newly added) The reactor of Claim 56, wherein the heat exchange member comprises a cooling plate and the plate is stored within an actively cooled pocket in the first position.

58. (Newly added) The reactor of Claim 57, wherein the plate extends over the substrate upon the support structure in the second position.

59. (Newly added) The reactor of Claim 53, wherein the distance is between about 0.5 and 1.5 mm.

60. (Newly added) A thermal exchange mechanism in a substrate processing system, the mechanism comprising:

a support structure configured to support a substrate;

a first thermal exchange element; and

a second thermal exchange element,
wherein the support structure, first and second thermal exchange elements are relatively movable between a thermal exchange position, in which the substrate is positioned between each of the first and second thermal exchange elements and spaced between about 0.2 mm and 3 mm from each of the first and second thermal exchange elements, and a substrate load position, in which a wafer handler can place the substrate upon the support structure.

61. (Newly added) The thermal exchange mechanism of Claim 60, wherein the support structure comprises a plurality of vertically oriented pins.

62. (Newly added) The thermal exchange mechanism of Claim 60, wherein each of the first and second thermal exchange members are actively cooled.

63. (Newly added) The thermal exchange mechanism of Claim 60, wherein each of the first and second thermal exchange members are vertically translatable on opposite sides of the substrate.

64. (Newly added) The thermal exchange mechanism of Claim 60, wherein the substrate is spaced between about 0.5 mm and 1.5 mm from each of the first and second cooling elements in the cooling position.

Sub D3 65. (Newly added) A cooling mechanism in a substrate processing system, the mechanism comprising:

a support structure, the support structure configured to support a substrate in a process chamber during high temperature processing; and

an actively cooled thermal exchange member,

wherein the support structure and the thermal exchange member are relatively movable between a cooling position, in which the substrate is supported upon the support structure between about

0.2 mm and 3 mm from the thermal exchange member, and a substrate load position, in which a wafer handler can place the substrate upon the support structure.

66. (Newly added) The cooling mechanism of Claim 65, wherein the support structure comprises a plurality of vertically oriented pins.

Sub E1 > 67. (Newly added) The cooling mechanism of Claim 65, wherein the thermal exchange member is translatable.

3 68. (Newly added) The cooling mechanism of Claim 65, wherein the support structure is translatable.

69. (Newly added) The cooling mechanism of Claim 68, wherein the support structure is vertically translatable.

Sub E1 > 70. (Newly added) The cooling mechanism of Claim 65, configured to position the substrate within the process chamber in the cooling position.

Sub E3 > 71. (Newly added) The cooling mechanism of Claim 70, wherein the substrate is supported upon the support structure between about 0.5 mm and 1.5 mm from the cooling element in the cooling position.

Sub E1 > 72. (Newly added) A processing reactor for high temperature treatment of substrates, the reactor comprising:

a plurality of walls defining a chamber;

a movable substrate support structure;

a heat source for heating a substrate upon the support structure within the chamber;

a thermal exchange member; and

a drive mechanism for moving the support structure between a first position and a

second position, the first position allowing treatment of the substrate upon the support

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structure within the chamber, the second position allowing the thermal exchange member to be spaced from the substrate by between about 0.2 mm and 3.0 mm to enable conductive heat transport between the thermal exchange member and the substrate.

73. (Newly added) The processing reactor of Claim 72, wherein the distance is between about 0.5 and 1.5 mm

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74. (Newly added) The processing reactor of Claim 72, wherein the thermal exchange member is positioned within the chamber.

Sub B2 > 75. (Newly added) The processing reactor of Claim 74, wherein the thermal exchange member is one of the plurality of walls defining the chamber.

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76. (Newly added) The processing reactor of Claim 72, wherein the thermal exchange member is actively cooled.